

**Notice of Allowability**

Application No.

10/686,520

Applicant(s)

KOCHERGIN ET AL.

Examiner

Kianni C. Kaveh

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/17/06 and 7/11/06.
2. ☒ The allowed claim(s) is/are 1-60.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**KAVEH KIANNI  
PRIMARY EXAMINER**

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 7/19/06, 3/12/04, 12/18/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

- Applicant's Supplemental amended drawings submitted on 1/16/2006 after deliberation with a USPTO official on 7/11/06 is accepted by the examiner.

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Faris on July 11, 2006 in order to correct the pertinent claims, cancel claim 61 and thus allow the application.

In the 9<sup>th</sup> line of each respective claims 1, 6, 7, 11, 12, 13, 14, 16, 20, 22, 29, 35, 48 and 60 before 'lengths' please delete **[the]**

In the 9<sup>th</sup> line of each respective claims 1, 6, 7, 11, 12, 13, 14, 16, 20, 22, 29, 35, 48 and 60 immediately after 'thereof' please reinsert '**of the waveguides**'

**Please cancel claim 61.**

### ***Reason for Allowance***

Claims 1-60 are allowed for the following reasons:

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The instant application is deemed to be directed to a nonobvious improvement over the invention patented in Pat. No. Scherer et al. (U.S. Patent 6,711,200).

Claims 1, 6, 7, 11, 12, 13, 14, 16, 20, 22, 29, 35, 48 and 60 are allowed because the prior art of record, taken alone or in combination, fails to disclose or render obvious

The plural waveguides are uniform and parallel, substantially mutually decoupled and thus independent waveguides which have coherently modulated cross-section along at least some part of lengths thereof of the waveguides in combination with the rest of the limitations of the base claim. Claims 2-5, 42-43, 47 depend on claim 1, 19 depend on claim 16, 25 and 26-28 depend on claim 22, 30 depend on claim 29, 36-37 depend on claim 35 and therefore they are also allowed.

Claim 15 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious where the waveguides are placed part by a distance in the range of 0.5 to 30 microns, the distance being greater than the smallest lateral dimension of the waveguide in combination with the rest of the limitations of the base claim.

Claim 17 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious where the waveguides are spatially ordered in symmetry, which is hexagonal in combination with the rest of the limitations of the base claim.

Claim 18 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious where the waveguides are spatially ordered in symmetry, which is cubic in combination with the rest of the limitations of the base claim.

Claim 21 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious where the pores are approximately square in cross-section in combination with the rest of the limitations of the base claim.

Claim 23 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious where the modulation is periodical with the period from about 50nm to about 20 microns in combination with the rest of the limitations of the base claim.

Claim 24 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious where the modulation is the superposition of two or more periodical modulations with the period from about 50nm to about 20 microns each in combination with the rest of the limitations of the base claim.

Claim 29 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious waveguides are tapered in combination with the rest of the limitations of the base claim.

Claim 30 depends upon claim 29 and therefore it is also allowed.

Claim 44 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious at least one layer of substantially transparent material in the transparency wavelength range of the spectral filter coating the pore walls in combination with the rest of the limitations of the base claim.

Claims 45-46 depend upon claim 44 and thus also allowed.

Claim 48 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious where the pores are approximately square in cross-section in combination with the rest of the limitations of the base claim.

Claim 49 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious at least one layer of substantially absorbing or reflecting material disposed on at least part of the pore length and the material is chosen to minimize the cross-coupling between the modes of neighboring waveguides in combination with the rest of the limitations of the base claim.

Claims 50-52 depend upon claim 49 and thus also allowed.

Claim 8 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious at least one layer of substantially transparent material at the transparency wavelength range of the spectral filter coating the pore walls in combination with the rest of the limitations of the base claim.

Claim 31 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious at least one layer of substantially absorbing or reflecting material disposed on at least part of the pore length and the material is chosen to minimize the cross-coupling between the modes of neighboring waveguides in combination with the rest of the limitations of the base claim.

Claim 38 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious where the wafer is disposed between two plates of material transparent in a predetermined spectral range in combination with the rest of the limitations of the base claim.

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Claim 53 is allowed because, the prior art of record, taken alone or in combination, fails to disclose or render obvious the host wafer with the holes completely filled with substantially transparent material, said filled pores comprising cores of the waveguides and the semiconductor material between the pores functioning to separate neighboring waveguides in combination with the rest of the limitations of the base claim.

Claims 9-10; 32-34; 39-41; and 54-59 depend on claims 8, 31, 38 and 53 respectively and therefore they are also allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Additional citation of Relevant Prior Art*

Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does.

These references are:

US 20050175304 A1          Romagnoli, Marco et al.

US 20030123827 A1          Salerno, Jack P. et al.

US 6711200 B1              Scherer; Axel et al.

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9306 (for formal communications intended for entry)

**or:**

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place,  
Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

K. Cyrus Kianni  
Primary Patent Examiner  
Group Art Unit 2883

**KAYEH KIANNI**  
**PRIMARY EXAMINER**



July 11, 2006